REMARKS

This application has been carefully reviewed in light of the Office Action dated October 6, 2004. Claims 1 to 20 are now pending in the application, with Claims 16 to 20 having been added. Claims 1, 8 and 15 to 17 are the independent claims herein. Reconsideration and further examination are respectfully requested.

Applicants wish to thank the Examiner for the indication that Claims 4, 6, 7, 11, 13 and 14 would be allowable if rewritten into independent form. Applicants have chosen not so rewrite any of these claims into independent form at this time since it is believed that the base claim for each of these claims is allowable for at least the reasons set forth below.

The specification was objected to for informalities that have been attended to by amendment as recited above. Withdrawal of the objection to the specification is respectfully requested.

Claims 2 and 9 were rejected under 35 U.S.C. § 112, second paragraph. Without conceding the correctness of the rejections, the language in question has been amended to make to subject matter of the claims even clearer. Withdrawal of the § 112 rejections is respectfully requested.

Claims 1 to 3, 5, 8 to 10, 12 and 15 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 5,684,542 (Tsukagoshi). Reconsideration and withdrawal of the rejections are respectfully requested.

The present invention relates to quantization of image data. According to the invention, in each pixel of an image, multi-valued image data is quantized to N-valued data and the N-valued data is output as a K-bit code. K-bit codes for M pixels are then combined and converted into an L-bit code, which is packed into data of a predetermined

number of bits and output. Thus, the number of bits (L) of the coded data is smaller than a sum of the number of bits (M x N) of the image data that is combined and a faster and more efficient printing process is obtained.

With specific reference to the claims, amended independent Claim 1 is an image processing apparatus, comprising a quantization section, arranged to quantize, in each pixel, multi-valued image data into N-valued data (where N is a natural number), and output the N-valued data as a K-bit code (where K is a natural number) that can express the N values, a converter, arranged to combine and convert K-bit codes for M pixels (where M is a natural number) into an L-bit code (where $L < M \times K$), and an output section, arranged to pack data converted by the converter into data of a predetermined number of bits, and output the packed data.

Amended independent Claims 8 and 15, and newly-added independent Claim 16 are method, computer program, and printer driver claims, respectively, that substantially correspond to Claim 1.

Newly-added independent Claim 16 includes features along the lines of Claim 1, but is more specifically directed to an image processing apparatus comprising a quantization section, arranged to quantize, in each pixel, multi-valued image data into N-valued data (where N is a natural number), and output a K-bit code capable of expressing the N values, a converter, arranged to collect K-bit codes for M pixels (where M is a natural number), and convert the collected K-bit codes into an L-bit code (where $L < M \times K$), and an output section, arranged to pack the L-bit code and the N-valued data into data of a predetermined number of bits, and output the packed data.

The applied art is not seen to disclose or to suggest the features of the present invention, and in particular, is not seen to disclose or to suggest at least the feature

of combining and converting K-bit codes for M pixels into an L-bit code (where L < M x K), and packing the converted data into data of a predetermined number of bits.

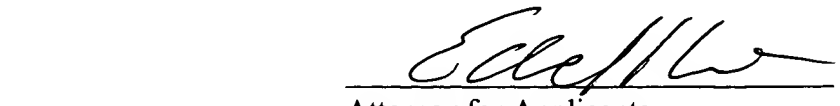
Tsukagoshi is seen to disclose a packing circuit 68 that combines output of a run length coding circuit 66, and a color quantization circuit 70 that converts each dot in a rectangular area into an address of a color lookup table 71. The lookup table stores brightness data (Y) and color difference data (Cb and Cr) composed of eight bits at respective addresses. The Office Action contended that Tsukagoshi discloses that "the run length coding circuit 66 encodes the input DPCM subtitle data into a data pair of level data and run data (col 9, lines 50-52), which reads on a conversion means for combining and converting K-bit codes for M pixels (where M is a natural number) into an L-bit code (where L < M x K)." However, Applicants disagree that the foregoing reads on the claimed converter since Tsukagoshi separates data (DPCM subtitle data) into two data (level data and run data), whereas the present invention combines plural data (K-bit codes for M pixels) into one data (an L-bit code). Thus, Tsukagoshi's circuit 66 is clearly opposite that of the present invention. Accordingly, Tsukagoshi is not seen to disclose or to suggest at least the feature of combining and converting K-bit codes for M pixels into an L-bit code (where L < M x K), and packing the converted data into data of a predetermined number of bits.

In view of the foregoing, all of Claims 1 to 20 are believed to be allowable over the applied art.

No other matters having been raised, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



Attorney for Applicants
Edward A. Kmett
Registration No.: 42,746

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-2200
Facsimile: (212) 218-2200

CA_MAIN 91756v1